Please amend the paragraph starting at page 1, line 10 and ending on line 17 as follows:

--This invention relates to an image forming apparatus for forming an electrostatic latent image in an image bearing body and ~~develops~~ <u>developing</u> the electrostatic latent image with developer stored in a developing apparatus, and more particularly to an image forming apparatus having a remaining developer amount detecting device provided with remaining developer amount detecting means capable of serially detecting the remaining amount of developer stored in a developer container as well as a cartridge that can be inserted in the image forming apparatus main body, that is, a process cartridge, a developing apparatus constituted as a cartridge.--.

Please amend the paragraph starting at page 2, line 4 and ending at line 11 as follows:

--In a conventional image forming apparatus using, for example, an electrophotographic image forming process, ~~the~~ <u>a</u> process-cartridge method is adopted <u>in which</u> ~~that~~ the cartridge is integrally constituted by an electrophotographic sensitive body and process means affecting the electronic electrophotosensitive body and is made to be detachably attachable to an electrophotographic image forming apparatus main body. In accordance with the process-cartridge method, since the maintenance of the apparatus can be conducted by a user in person and not by a serviceman, the operability is considerably improved. Hence, the process-cartridge method is widely used in electrophotographic image forming apparatuses.--.

Please amend the paragraph starting at page 2, line 12 and ending at line 16 as follows:

--In an electrophotographic image forming apparatus using a process-cartridge method, although an image can be formed again by replacing a cartridge when developer is exhausted, the

replacement of a cartridge should be performed by a user in person ~~and, therefore.~~ and, therefore,

means for warning a user when developer is exhausted, i.e., a remaining developer amount

detecting device, is required.--.

Please amend the paragraph starting at page 10, line 1 and ending at line 2 as follows:

--Fig. 14 is a flow chart of an abnormality detecting system of the seventh embodiment of

the present ~~invention.~~ invention; --.

Please amend the paragraph starting at page 10, line 7 and ending at line 8 as follows:

--Fig. 17, composed of Figs. 17A and 17B ~~17B~~, is a flow chart of an abnormality

detecting system of the ninth embodiment of the present invention;--.

Please amend the paragraph starting at page 10, line 13 and ending at line 14 as follows:

--Fig. 20, composed of Figs. 20A and 20B ~~20B3~~, is a flow chart of a remaining developer

amount indicating system of the twelfth embodiment of the present invention.--.

Please amend the paragraph starting at page 11, line 4 and ending at line 9 as follows:

--The laser beam printer A has a drum-shaped electrophotosensitive body, i.e., a

photosensitive drum 1. The photosensitive drum 1 is charged by ~~an~~ a charging roller 2 ~~being~~ as

charging means and then a latent image corresponding to image information is formed on the

photosensitive drum 1 by irradiating the drum 1 with a laser beam L corresponding to image

information from a laser scanner 3. The latent image is developed by developing means 5 and is

made a visible image, i.e., a toner image.--.

Please amend the paragraph starting at page 13, line 11 and ending at line 16 as follows:

--In accordance with this embodiment, as described above, agitating means 10 rotating in the direction represented by an arrow of Fig. 1 is provided in the developer container 4, and the developer T is supplied to the developing roller 5a while softening the developer by rotating the agitating means 10. In addition, ~~a flat antenna, i.e., a flat antenna~~ a flat antenna 20 is mounted as remaining developer amount detecting means on the internal wall of the developer container 4 as shown in Fig. 3.--.

Please amend the paragraph starting at page 25, line 14 and ending at line 15 as follows:

--TA1 and TA0 are compared as follows ~~in, the~~ in the comparing means 50 and the comparing means 48 (step 108). --.

Please amend the paragraph starting at page 31, line 3 and ending at line 11 as follows:

--Further, a read-writable NVRAM is adopted as the memory means 31 to be mounted on the process cartridge B in this embodiment. As shown in Fig. 8, data writing and reading means with respect to the memory means 31 of the remaining developer amount detecting device 30 provided with the remaining developer amount detecting means 20 is provided in the image forming apparatus main body 100 side. In addition, a signal processing means 132 disposed in the image forming apparatus main body 100 side processes an output signal of the remaining developer amount detecting device 30 to confirm the remaining-developer-amount level and determines if a remaining-developer-amount level has reached the level at which the alarm of "toner LOW" and "toner OUT" should be indicated.--.

Please amend the paragraph starting at page 38, line 3 and ending at line 10 as follows:

--In addition, theoretically, the remaining-developer-amount level to be detected by the remaining developer amount detecting means 20 does not possibly increase. Therefore, naturally, it is a normal operation of the ~~the~~ remaining-developer-amount detecting means 20 to detect the remaining developer amount level at which the alarm of "toner OUT" informs the user that the developer is running out and it is necessary to immediately replace a cartridge and to indicate this to the user after detecting the remaining developer amount level at which the alarm of "toner LOW" informing the user that the developer is running short and the time to replace the cartridge B is approaching.--.

Please amend the paragraph starting at page 40, line 1 and ending at line 14 as follows:

--In this embodiment, the following four combinations listed in the table below are all the combinations of the "toner LOW" alarm flag and the "toner OUT" alarm flag.

	Case 1	Case 2	Case 3	Case 4
State of "toner low" flag	0	1	1	~~1~~ <u>0</u>
State of "toner out" flag	0	0	1	1
Judgement	Normal Operation	Normal Operation	Normal Operation	Abnormal Operation
Indicated information	~~Non~~ <u>None</u>	"toner low"	"toner out"	"abnormal state"

--.

Please amend the paragraph starting at page 43, line 14 and ending at line 20 by placing a line break before "1." at line 17 as follows:

--First, whether the remaining-developer-amount level at which the alarm of "toner OUT" should be indicated has been detected or not is confirmed (step 2102), and then whether the remaining-developer amount level at which the alarm of "toner LOW" should be indicated has been detected or not is confirmed (step 2103 and step 2106).

1. The case in which the "toner OUT" alarm flag is 1 (the fact that the remaining-developer-amount level at which the alarm of "toner OUT" should be indicated has been detected is memorized in the memory means 31) --.

Please amend the paragraph starting at page 44, line 9 and ending at line 17 by placing a line break before "2." at line 13 and by placing another line break before "2-1" at line 15 as follows:

--It is determined that both remaining-developer-amount levels at which the alarms of "toner OUT" and "toner LOW" should be indicated have been normally detected and an alarm concerning each remaining-developer amount has been produced. This case corresponds to the case 3. Therefore, the alarm of "toner OUT" that is the final alarm concerning the remaining-developer amount is indicated (step 2105).

2. The case in which the "toner OUT" alarm flag is 0 (the remaining-developer-amount level at which the alarm of "toner OUT" should be indicated has not been detected).

2-1. The case in which the "toner LOW" alarm flag is 1 (the remaining developer amount level at which the alarm of "toner LOW" should be indicated has been detected is memorized in the memory means 31).--.

Please amend the paragraph starting at page 58, line 17 and ending at line 20 as follows:

--By disposing these in the controller portion 243, it becomes easy to display the remaining-developer-amount level and the occurrence of an abnormality on the host 241 such as a personal computer or a workstation ~~that are~~ each of which is an apparatus having a display that can communicate with the image forming apparatus.--.

Please amend the paragraph starting at page 63, line 15 and ending at line 21 as follows:

--Signal output means 347 for outputting a signal indicating the remaining-developer-amount level and the occurrence of the abnormality to the display portion 33 of the image forming apparatus main body or an apparatus having a display that can communicate with the image forming apparatus is disposed in a controller portion D. In this way, it becomes easy to display the remaining-developer-amount level and the occurrence of an abnormality on the host 341 such as a personal computer ~~and~~ or a workstation ~~that are~~ each of which is an apparatus having a display that can communicate with the image forming apparatus. --.

Please amend the paragraph starting at page 66, line 6 and ending at line 16 as follows:

-- That is, as described above, the developer amount in the developer container 4 is usually confirmed by statistical processing, such as statistical processing for taking an average value of antenna outputs detected while, for example, the agitating means 10 performs ten rotations. On the other hand, as the above-mentioned simple statistical processing, the following has possibly occurred:

1. Impressing bias on the flat antenna 20 without rotating the agitating means 10. ~~Although.~~

Although, there is a high possibility that the developer sticks to the flat antenna and remains,

there is no problem in a rough detection.

2. Taking an average value of antenna outputs detected during one rotation of the agitating means

10. Precision of the detection is decreased, but there is no problem in a rough detection. --

Please amend the paragraph starting at page 69, line 4 and ending at line 7 as follows:

--The above processing is shown as a flow chart in Figs. 17A and 17B. ~~developer amount~~

~~indicating]~~ The remaining-developer-amount-indicating method and the abnormality detection

method of the cartridge and the image forming apparatus will now be described with reference to

Figs. 17A and 17B.--.

Please amend the paragraph starting at page 72, line 4 and ending at line 11 as follows:

--In this embodiment, although the controller portion D is configured to have a part of the

comparing functions of a remained-developer-amount level, the controller portion D can be

configured to be provided with all the functions. In this case as well, on the video interface (I/F)

343 being communicating means of the controller portion D and the engine portion C, there are

two lines of outputs relating to the remaining developer amount level, namely, the current ~~the~~

remaining-developer-amount-level value confirmed by the remaining developer amount detecting

means 20 and the remaining-developer-amount-level value confirmed by the previous remaining-

developer-amount detection and memorized in the memory means 31.--.

Please amend the paragraph starting at page 80, line 13 and ending at line 17 as follows:

--In this embodiment, the memory means 31 mounted on the process cartridge B is a nonvolatile memory of the serial data input/output type and has the memory capacity of 16 bits. This capacity is enough to express integral numbers from ~~0~~ 0 to 100. Thus, it is possible to memorize the remaining-developer-amount level in the developer container 4 as a percentage.--.

Please amend the paragraph starting at page 84, line 4 and ending at line 7 as follows:

--This simple statistical processing is performed by the signal processing means 444 disposed in the engine portion C. The approximate ~~developer amount]~~ remaining-developer-amount level is confirmed as the remaining developer amount level in the developer container 4 using the relationship between an electrostatic capacity to be detected using the flat antenna 20 and the developer amount that are related to each other in advance. --.

03500.014744
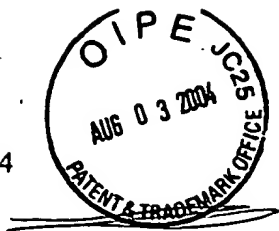
PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
                      : Examiner: Q. Grainger
SHINYA YAMAMOTO, et al.)
                      : Group Art Unit: 2852
Application No.: 09/650,752)
                      : Notice of Allowance: June 7, 2004
Filed: August 29, 2000) Confirmation No. 2467
                      :
For: IMAGE FORMING APPARATUS)
COMPRISING MEANS FOR DETECTING :
AN AMOUNT OF DEVELOPER CONTAINED)
IN A DEVELOPER CONTAINER, A :
MEMORY FOR STORING THE AMOUNT)
DETECTED BY THE DETECTING MEANS, :
AND CONTROL MEANS FOR UPDATING)
THE INFORMATION STORED IN THE :
MEMORY) July 22, 2004

MAIL STOP Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an Amendment After Allowance in the above-identified application.

[X]   No additional fee is required.

The fee has been calculated as shown below

CLAIMS AS AMENDED						
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE
TOTAL CLAIMS	18	MINUS	54	= 0	x $9 $18	$0.00
INDEP. CLAIMS	2	MINUS	7	= 0	x $42 $84	$0.00
Fee for Multiple Dependent claims $140°/$280						
			TOTAL ADDITIONAL FEE FOR THIS AMENDMENT---			$0.00

☐ °Verified Statement claiming small entity status is enclosed, if not filed previously.

☐ A check in the amount of $ is enclosed.

☐ Charge $ to Deposit Account No. 06-1205. A duplicate copy of this sheet is enclosed.
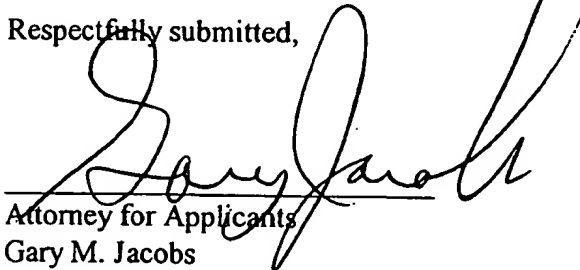
☒ Any prior general authorization to charge an issue fee under 37 C.F.R. 1.18 to Deposit Account No. 06-1205 is hereby revoked. The Commissioner is hereby authorized to charge any additional fees under 37 C.F.R. 1.16 and 1.17 which may be required during the entire pendency of this application, or to credit any overpayment, to Deposit Account No. 06-1205. A duplicate copy of this paper is enclosed.

☐ A check in the amount of $ to cover the fee for   month extension is enclosed.

☐ A check in the amount of $ to cover the Information Disclosure Statement fee is enclosed.

☒ Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

Attorney for Applicants
Gary M. Jacobs
Registration No. 28,861

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
GMJ\smj

DC_MAIN 169830v1